

# Mathematics

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## (Chapter 2)(Inverse Trigonometric Functions)

(Class XII)

### (Exemplar Problems)

#### Objective Type Questions

Fill in the blank in the following:

#### Question 39:

The value of  $\sin^{-1}\left(\sin \frac{3\pi}{5}\right)$  is \_\_\_\_\_.

#### Answer 39:

Given that:  $\sin^{-1}\left(\sin \frac{3\pi}{5}\right)$

Now, we have

$$\sin^{-1}\left(\sin \frac{3\pi}{5}\right)$$

$$= \sin^{-1}\left[\sin\left(\pi - \frac{2\pi}{5}\right)\right]$$

$$= \sin^{-1}\left(\sin \frac{2\pi}{5}\right)$$

$$= \frac{2\pi}{5}$$



$$\left[\because \sin^{-1}(\sin x) = x \text{ if } x \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]\right]$$

Hence, the principal value of  $\sin^{-1}\left(\sin \frac{3\pi}{5}\right)$  is  $\frac{2\pi}{5}$ .

